Joint Logistics Systems Center

F A C T S H E E T

Materiel Management

Math Models

Math Models provides a suite of powerful computational techniques to support the Department of Defense (DoD) logistics community in determining wholesale requirements for consumable and reparable items. Optimal search algorithms and responsive parametric analysis tools are the core of these sophisticated applications. Math Models' improved techniques enable DoD users to achieve dramatic inventory savings and for the first time to link wholesale requirements to weapon system performance at the retail level. The high-level functionality of Math Models applications was identified by the Components in the JLSC's Materiel Management Requirements Determination Business Process Model.

FUNCTIONS

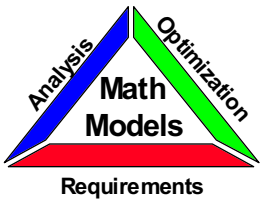
Math Models consists of two major applications - Economic Order Quantity/ Variable Safety Level (EOQ/VSL) and Computational And Research Evaluation System/Supply Performance Analyzer (CARES/SPA). Both will be used in the area of inventory management (procurement, repair, performance and investment) at the DoD's Inventory Control Points (ICPs).

EOQ/VSL

- Provides common "subroutine" or "black box" for use by DoD requirements determination systems
- Computes optimal procurement and repair levels by item or groups of inter-changeable/substitutable items (families) to achieve performance goals
- Computes backorder and performance projections for both consumable and reparable items
- Passes computational results to the calling system for action

CARES/SPA

- Provides "What-if" capability to reflect how a change in parameter values would affect levels setting and/or performance projections for a user-defined group of items
- Allows user control of parameter and item data, program options, processing options and sample content



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- Identifies shortage cost associated with user-selected wholesale performance target-fill rate, dollar value safety level, or response time
- Models the impact of projected available assets on the safety levels required to meet a group performance target
- Coordinates multi-echelon (wholesale and retail) supply requirements computations for essential weapon system items using optimal readiness based sparing performance measures

CONTRIBUTING SYSTEMS

Various Component systems were used to identify existing functional requirements to be incorporated into Math Models functionality. Specifically those systems are:

- Navy Levels Setting Model
- Navy Performance Projections Model
- Navy CARES Model
- Army SPA Model
- Army EOQ/VSL Model

BENEFITS

Math Models applications provide significant benefits to the DoD logistics community. Included are:

- Increased accuracy of requirements computations resulting in dramatic inventory savings
- Powerful tool for analyzing groups of items to enable correct management decisions, thus reducing overall item support costs
- Stabilized requirements level, eliminating funds expended for excessive changes to essential stocks

SUMMARY

Math Models represents a joint development effort involving functional user representatives from each Component as well as computer systems professionals from the developers. The result is a system designed with user participation which ensures the final product meets user needs. Math Models applications will greatly improve the way the DoD logistics community computes wholesale item requirements.

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